

In the *Orchestia* the inoculations do not succeed so easily because the operation is more delicate; but the animal longer retains its muscular power: an *Orchestia* inoculated on the 12th still jumped on the 19th, although it was in full phosphorescence. The *Talitri* and *Orchestia* in which the inoculation does not succeed remain in perfect health long after their congeners are dead; the puncture, when well made, therefore is not serious in itself.

I have inoculated examples of *Hyale Nilssoni*, Rathke, with perfect success; in these little Amphipoda phosphorescence is produced in forty-eight hours. Specimens of *Ligia oceanica*, Linn., though more resistant, also gave a favourable result. Of six *Ligia* unsuccessfully inoculated on the 10th and re-inoculated on the 16th only one was infected; but after the 20th it presented an admirable spectacle.

I have also succeeded in inoculating crabs (*Carcinus mænas*, Linn., and *Platyonychus latipes*, Penn.). In these animals, however, the morbid phenomena are much more complex, and I will notice them in a subsequent communication. At the same time I will describe my experiments in the culture of the Bacteria in artificial media.—*Comptes Rendus*, September 23, 1889, p. 503.

On the Parasitic Castration of the Typhlocybæ by a Hymenopterous Larva (Aphelopus melaleucus, Dalm.) and by a Dipterous Larva (Atelenevra spuria, Meig.). By M. A. GIARD.

The Hymenopterous and Dipterous larvæ parasitic upon *Typhlocyba* noticed by the author in a former communication* belong, the former to *Aphelopus melaleucus*, Dalm., the latter to *Atelenevra spuria*, Meig. (*A. velutina*, Macq., *Chalarus spurius*, Schin.).

These insects, like their hosts the *Typhlocybæ*, have two generations in the year: one, proceeding from pupæ formed during the second fortnight in June, comes out at the beginning of July; the other infests the second generation of *Typhlocyba*, enters the pupa state towards the end of September or in October, and probably passes the winter in that state, producing the perfect insect in the following spring.

Combining these observations with those of Perris (on the parasitism of *Dryinus pedestris*, Dalm., upon *Athymanus maritimus*, Perris) and of J. Mik (on the parasitism of *Gonatopus pilosus*, Thoms., upon *Deltocephalus axanthoneurus*, Fieb.) it seems probable that the Proctotrupians of the family Dryinidæ are generally parasitic upon Homoptera of the family Jassidæ.

On the other hand, as regards the Diptera, the present observation, especially in conjunction with Boheman's statements, particularly as to the infestation of *Cicadula virescens*, Fall. (*Thamnotettix sulphurella*, Zett.), by the larva of *Pipunculus fuscipes*, Fall., makes it probable that the Diptera of the family Pipunculidæ are also generally parasitic upon Jassidæ.

The *Typhlocybæ* with yellow or whitish elytra form a small group of species often living side by side upon the same trees, and resembling each other so closely that it is almost impossible to distinguish them. Mr. James Edwards, of Norwich, has recently called attention to the very distinct differential characters presented by the male genital armature in these different species. In accordance

* *Comptes Rendus*, July 8, 1889, p. 79: see *Annals*, *suprà*, p. 254.

with his researches the *Typhlocyba* of the horse-chestnut indicated in the former note as *T. rosæ*, Linn., really belong to two distinct species, viz., *T. hippocastani*, J. Edw., and *T. Douglasi*, J. Edw., which are equally common on the trees of the Luxembourg. These two species may be attacked by the two parasites here mentioned; but the *Aphelopus* especially infests *T. hippocastani*, while the *Atelenevra* almost always occurs in *T. Douglasi*.

The females of *T. hippocastani* and *T. Douglasi* are very difficult to distinguish; nevertheless in the latter the ovipositor is more robust and presents only a single curvature, while in *T. hippocastani* it is thinner and doubly curved in the form of a scimitar. In individuals of both species parasitized by *Aphelopus* the ovipositor is generally much reduced and incapable of penetration, but *Atelenevra* seems to have much less influence on the development of this organ.

As regards the male genital armature, in *T. Douglasi* the penis is simple and the lateral pieces have the form of legs; parasitic castration, whether by *Aphelopus* or *Atelenevra*, causes very slight modifications in it. In *T. hippocastani* the lateral pieces are simple and slender arcs, but the penis presents a very complex structure and terminates in a fork with eight branches of very elegant form. In the males parasitized by *Atelenevra*, and especially in those infested by *Aphelopus*, the penis undergoes considerable reductions; it has sometimes six, sometimes four, and sometimes only three branches. The specific character is thus greatly modified, and some of the forms might easily be confounded with *T. rosæ*, Linn., or *T. Lethierryi*, J. Edw.

Modifications of equal extent occur in certain singular organs, the existence of which in the males of *Typhlocyba* does not appear to have been noticed, and of which the function is quite unknown. These are two invaginations of the ectoderm which start from the ventral surface of the first abdominal segment and extend like the fingers of a glove to the extremity of the fourth segment or a little further. The author regards them as homologous with the stridulant organs of the male Cicadas. In the males of *T. Douglasi* and *T. hippocastani* infested by *Aphelopus* or *Atelenevra* the ventral invaginations are much reduced, reaching only, in general, to the second abdominal segment, and often forming only two little pockets on the first segment.

Aphelopus melaleucus appears to be pretty common; it has been met with at Wimereux and in the wood at Meudon upon *T. hippocastani* and *T. ulmi*, which often live together upon the elm, with *T. opaca*, J. Edw. In these localities the sac which contains the larva instead of being yellow as in the Luxembourg garden, is usually of a blackish colour. This colour is evidently protective of the more numerous individuals living upon *T. ulmi*, the abdomen of which is black, and is probably due to heredity in the others. Perhaps, moreover, *Aphelopus* presents varieties in the different species of *Typhlocyba* which it infests: Walker has described fifteen forms of this Hymenopteron, and the individual figured by him differs in certain characters from those examined by the author, who says that he has been unable to find the least trace of the cells of the fore wings, and that the palpus possesses only five joints instead of six.—*Comptes Rendus*, Nov. 4, 1889, p. 708.